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NOTES, INFORMATION & NEWS

New Information on a Poorly Known Late Paleocene Turrid Gastropod from Southern California and Vicinity

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Introduction

Waring (1917), in his study of lower Tertiary marine mollusks from the Simi Hills and neighboring areas in Ventura County, southern California, described but did not illustrate the gastropod *Bathytoma boundeyi* Waring, 1917. Although this species is a turrid, it actually belongs in genus *Parasyrinx* Finlay, 1924. In addition, Waring's species name is the senior synonym of another species name. The purposes of this report are to provide the first illustrations of the specimen Waring used to define his species and to provide a taxonomic update of this late Paleocene gastropod.

Parasyrinx is interesting in that it is a predominantly Paleogene genus known only from the northeastern Pacific and New Zealand. As shown in this report, it appeared first in the northeastern Pacific but persisted longer in New Zealand. The genus also has interesting paleotemperature and bathymetric distributions, first appearing in warm-water nearshore faunas, as shown in this report, but subsequently becoming typical of cool-water bathyal faunas.

The following institutional acronyms are used: CAS, California Academy of Sciences, San Francisco; LACMIP, Natural History Museum of Los Angeles County, Invertebrate Paleontology Section, Los Angeles; LSJU, Leland Stanford Jr. University, Stanford (collections now housed at CAS); UCMP, University of California, Museum of Paleontology, Berkeley; and UCR, University of California, Riverside.

Systematic Paleontology

Family TURRIDAE Swainson, 1840

Genus *Parasyrinx* s.l. Finlay, 1924

Types species: *Pleurotoma alta* Harris, 1897, by original designation; early Miocene, New Zealand.

Parasyrinx boundeyi (Waring, 1917)

(Figures 1–8)

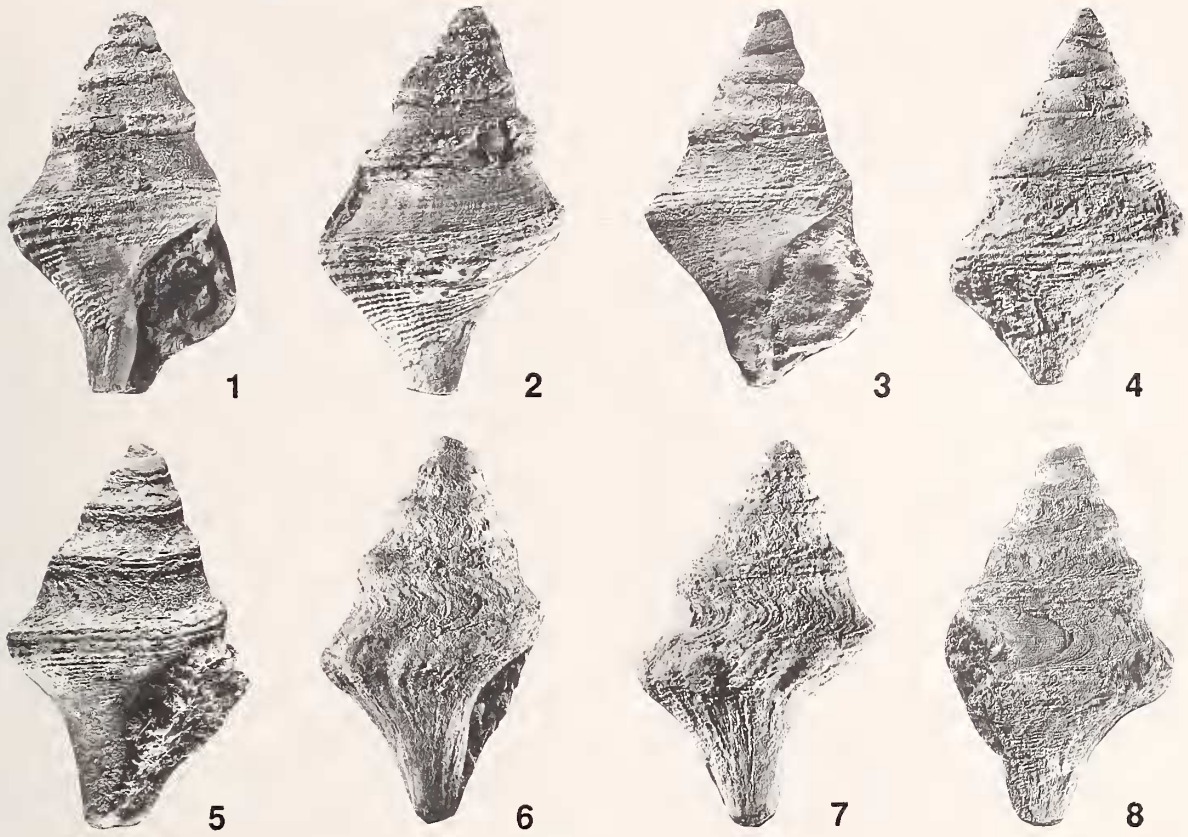
Bathytoma boundeyi Waring, 1917:81–82 (unfigured).
Parasyrinx n. sp. Zinsmeister, 1983a: 70, pl. 4, fig. 27.
Parasyrinx hickmani Zinsmeister, 1983b:1300, fig. 3 V, W; Zinsmeister & Paredes, 1988:13.

Primary type material: CAS holotype 61901.01 [= LSJU holotype 193] of *Bathytoma boundeyi.* UCR holotype 6668/36 and UCR paratype 4572/100 of *Parasyrinx hickmani.*

Supplemental description: Shell small, up to 15.8 mm high (incomplete), pagodaform, five to six whorls, pleural angle about 50 degrees. Rounded angulation immediately posterior to suture; angulation with two moderately coarse spiral ribs and, on portion of abapertural side of body whorl of largest specimen, with several short and distinctly ophisthocline collabral nodes parallel to growth lines. Very fine spiral ribs on concave ramp of whorls; minutely beaded ribs near suture. Four very coarse spiral ribs just anterior to angulation on body whorl; ribs more closely spaced and finer anteriorly and slightly beaded on posterior part of neck. Growth lines on neck intersect very fine spiral ribs, forming a minutely cancellate pattern. Anal sinus U-shaped, in center of ramp. Inner lip smooth, with callus.

Remarks: Waring (1917) reported a single specimen of *Bathytoma boundeyi* from his locality 4 [= CAS loc. 61901] in the upper Paleocene Santa Susana Formation on the south side of Simi Valley in the Simi Hills. This locality is in the lower part of the formation. The specimen of *B. boundeyi* does not have the morphological features that are diagnostic of genus *Bathytoma* Harris & Burrows, 1891. These features are biconical shape, gemmulose spiral ribs, an anal sinus whose apex is on a peripheral carina, and a siphonal fasciole (Powell, 1966; Davies & Eames, 1971).

Comparison of "*Bathytoma*" *boundeyi* with other fossil turrids revealed that Waring's species is conspecific with *Parasyrinx hickmani* Zinsmeister, 1983b. Only two specimens of *P. hickmani* were reported by Zinsmeister (1983b). The holotype of *P. hickmani* is from UCR locality 6668, and the paratype is from UCR locality 4572. Both are from the lower part of the Santa Susana Formation in Meier Canyon where there are numerous float boulders from the almost completely covered (Squires, 1997) so-called Martinez marine member of Nelson (1925). Illustrations (Figures 3–8) of both of these specimens are provided here for comparison, and show, for the first time, the apertural view of each and the lateral views of the holotype. The holotype of "*Bathytoma*" *boundeyi* (Figures 1, 2) and the paratype of *P. hickmani* (Figures 3, 4) are both about 12 mm in height and are indistinguishable. The holotype of *P. hickmani* (Figures



Figures 1–8

Parasyrinx boundeyi (Waring, 1917). Figures 1, 2. Holotype CAS 61901.01, CAS loc. 61901, height 12.1 mm, ×4.2. Figure 1. Apertural view. Figure 2. Abapertural view. Figures 3, 4. Paratype UCR 4572/100 of *Parasyrinx hickmani,* height 12.4 mm, ×4. Figure 3. Apertural view. Figure 4. Abapertural view. Figures 5–8. Holotype UCR 6668/36 of *Parasyrinx hickmani,* height 15.8 mm, ×3.2. Figure 5. Apertural view. Figure 6. Left-lateral view, using low-angle illumination. Figure 7. Abapertural view, using low-angle illumination. Figure 8. Right-lateral (outer lip) view. All specimens coated with ammonium chloride.

5–8) is slightly larger and differs only in the presence of four, or possibly five short, collabral nodes on the angulation on a portion of the abapertural side of the body whorl (Figures 6, 7). These nodes, which are not very obvious except under low-angle illumination, are not present near the outer lip and do not appear to be a constant morphologic feature. Based on the available evidence, apparently they are unique to the holotype of *P. hickmani.* By definition, the angulation should be smooth on this genus (Finlay, 1924; Powell, 1966; Zinsmeister, 1983b).

A search of the LACMIP collection revealed additional specimens of *Parasyrinx boundeyi* at LACMIP localities 22307 (one specimen) and 22330 (11 specimens). They are from the same area where the type specimens of *P. hickmani* were collected. Most of these additional specimens are badly weathered. The largest ones, 14 mm high (slightly incomplete), show no nodes on the angulation.

The shape of the shell, the shape and location of the anal sinus, and the subdued ornamentation argue for the assignment of Waring's species to genus *Parasyrinx.* This genus ranges from late Paleocene to late early Miocene, with reported species known only from the southwestern coast of North America and from New Zealand (Zinsmeister, 1983b; Beu & Maxwell, 1990). On the southwestern coast of North America, *Parasyrinx* ranges from late Paleocene in southern California and northern Baja California to the latest Eocene and earliest Oligocene (Galvinian Stage) in northwestern Oregon and Washington (Hickman, 1976). In New Zealand, *Parasyrinx* ranges from late Eocene to late early Miocene.

The two nominal subgenera of *Parasyrinx* are *Parasyrinx* s.s. and *Lirasyrinx* Powell, 1942, and they differ primarily in the shape of the protoconch (Powell, 1942). The protoconch of *Parasyrinx* s.s. consists of two rounded whorls, whereas that of *Lirasyrinx* consists of four whorls, with the first two smooth, and the remaining two spirally lirate (Powell, 1942; Beu & Maxwell, 1990). *Parasyrinx* s.s. has been reported only from upper Oligocene

and lower Miocene rocks in New Zealand, and *Lirasyrinx* has been reported only from upper Eocene to upper Oligocene rocks in New Zealand (Beu & Maxwell, 1990; Maxwell, 1992). Hickman (1976), in her work on the Galvinian Stage occurrences of *Parasyrinx* in Oregon and Washington, did not use subgeneric subdivisions because she believed that the protoconch differences that distinguish *Parasyrinx* s.s. from *Lirasyrinx* are of questionable value. Beu & Maxwell (1990), however, regarded these Galvinian Stage species as belonging to *Parasyrinx* s.l. These species are *Parasyrinx kincaidi* (Weaver, 1916), *P. dickersoni* (Weaver, 1916), and *P. delicata* Hickman, 1976.

As there are no protoconch characters available from the specimens of *P. boundeyi* that would allow them to be assigned to subgenus based on existing criteria, these specimens can only be assigned to *Parasyrinx* s.l. When compared to the Pacific Northwest and New Zealand species of genus *Parasyrinx,* the specimens of *Parasyrinx boundeyi* are most like those of *Parasyrinx kincaidi* from Oregon and Washington, especially in terms of the rounded angulation. *Parasyrinx boundeyi* differs from *P. kincaidi* by having a much wider spire and coarser spiral ornamentation.

At the localities where *Parasyrinx boundeyi* has been found, there are megafossil assemblages of similar taxonomic composition (Waring, 1917:71, 72; Zinsmeister, 1983a b). This entire megafauna, which is dominated by mollusks, is indicative of nearshore-marine conditions (Zinsmeister, 1983a, b). All these localities, furthermore, are in Parker's (1983) "eastern facies" of the Santa Susana Formation. Using microfossil data, he determined that this facies was deposited in a deep-marine (middle bathyal) setting, and he reported that the nearshore-marine megafauna must be displaced.

Specimens of *Parasyrinx boundeyi* found in the Paleocene Sepultura Formation in northern Baja California are also associated with numerous other nearshore and warm-water (tropical to subtropical) gastropods and bivalves (Zinsmeister & Paredes, 1988). Specimens of the various species of *Parasyrinx* s.l. found in the Pacific Northwest Galvianian Stage are associated with outer neritic to bathyal, cool-water mollusks (Hickman, 1976, 1980).

Late Eocene specimens of *Parasyrinx* (*Lirasyrinx*) from New Zealand are associated with warm-water (subtropical) mollusks, whereas early Miocene specimens of *Parasyrinx* s.s. are associated with temperate-water mollusks (Beu & Maxwell, 1990). Bathymetric data for the New Zealand specimens, unfortunately, are poorly known.

It is apparent, therefore, that members of genus *Parasyrinx* s.l. were initially shallow-marine, warm-water taxa but later became restricted to cooler environs and, in the Pacific Northwest, also restricted to deeper environs.

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Localities Cited

Topographic base map is the U. S. Geological Survey, 7.5-minute, Calabasas Quadrangle, California, 1952 (photorevised 1967).

CAS 61901 [= LSJU 2695 = UCMP 3776]. Just east of the letter "e" in Runkle Canyon.

LACMIP 22307. Fine-gained gray concretionary sandstone outcropping on west side of Meier Canyon in vicinity of the word "Canyon" in Meier Canyon.

LACMIP 22330. Beds cropping out on nose of spur on west side of Meier Canyon, approximately 193 m north of second "n" in Meier Canyon.

UCR 4572. Concretion from west side of Meier Canyon, 549 m N23°W of hill 1658 in NW corner of quadrangle.

UCR 6668. Concretion from west side of Meier Canyon, 396 m due west of hill 1658 in NW corner of quadrangle.

International Commission on Zoological Nomenclature

The new and extensively revised 4th Edition of the *International Code of Zoological Nomenclature* has now been published and is in effect from 1 January 2000. The price is US $65 or £40, but discounts are offered to individuals buying the Code for personal use or to institutions buying five or more copies. Full details of how to buy copies are given on the Commission's website (www.iczn.org) or may be obtained by e-mailing "iczn@nhm.ac.uk".

The following Opinions concerning mollusks were published on 30 September 1999 in Volume 56, Part 3 of the *Bulletin of Zoological Nomenclature*. Copies of these Opinions can be obtained free of charge from the Executive Secretary, I.C.Z.N., % The Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).

Opinion 1939. Osilinus Philippi, 1847 and *Austrocochlea* Fischer, 1885 (Mollusca, Gastropoda): conserved by the designation of *Trochus turbinatus* Born, 1778 as the type species of *Osilinus*.

Opinion 1931. *Campeloma* Rafinesque, 1819 (Mollusca, Gastropoda): conserved.

Opinion 1932. *Holospira* Martens, 1860 (Mollusca, Gastropoda): *Cylindrella goldfussi* Menke, 1847 designated as the type species.